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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/046,121	03/20/98	HALL	B	EN998028

WM02/1107

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EXAMINER
WONG, A

ART UNIT	PAPER NUMBER
2613	11

DATE MAILED: 11/07/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2001* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-38* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6,8,10,14,19,27,29 and 30* is/are allowed.

6)☒ Claim(s) *1-5,7,9,12,13,15-18,20-26,28 and 31-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

  If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____ .

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

  a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Prosecution Application

The request filed on 8/24/01 for a Continued Prosecution Application (CPA)

under 37 CFR 1.53(d) based on parent Application No. 09/046,121 is acceptable and a

CPA has been established. An action on the CPA follows.

Response to Arguments

Applicant's arguments filed 8/24/01 have been fully read and considered but they

are not persuasive.

On pages 30-34 of applicants' remarks, applicants assert that Uz does not teach,

suggest or disclose any relevant concepts of the present invention. The Examiner

respectfully disagrees.   The applicants assert that Uz does not teach or suggest the

use of intra-frame statistics frames containing noisy portions. The examiner's citation of

Uz, column 25-27 states that the use of frame coding is typically preferred when the

video scene contains "significant detail" or significantly contrasted complexity. Further,

Uz teaches that the use bit budgeting for each frame is dependent on the compleixty

measure for each section of the frame, as disclosed in column 4, lines 34-37. The

suggestion is that the complexity of a frame determines the use of "frame coding" or

intra-frame coding is proper because of the significant detail of the video scene. Bit

budgeting is affected because the more detail there is, the more bits are needed to

encode the scene, assuming if one wants an accurate representation of a video scene.

Applicants argue that Uz does not teach or suggest the measure of the activity

level. The examiner respectfully disagrees. The activity level measure is taught by Uz,

as disclosed in column 4, lines 39-42 and column 8, lines 27-35. Evidently, there is no fundamental difference between Uz's activity level measure and the applicants' activity measure because both pertain to the activity level in macroblocks.

Applicants' argue that Uz does not teach the limitation of biasing the coding of highly complex macroblocks towards predictive coding. The examiner respectfully disagrees. Uz does teach or suggest that the use of inter-coding (ie. predictive coding) is in fact deterring the use of intra-coding (column 9, lines 10-12). Uz states that the technique applied to the decision of encoding of the macroblocks is "biased against intra-coding", meaning the deterrence of intra-coding of the highly complex macroblocks.

With regards to applicants' remarks on page 34-38, applicants contend that Flannaghan's teachings are unrelated to the present invention. The examiner respectfully disagrees. The Flannaghan reference is primarily used for reinforcing the teachings of Uz. Flannaghan discloses the determination of noise in frames, as disclosed in col.3, lines 3-10. The erroneous frame difference value is the noisy portion of a frame, and as any one of ordinary skilled in the art would acknowledge that frames are comprised of macroblocks.

In response to applicants' remarks on claim 7, please see rejection and the examiner's comments in the above paragraphs.

Regarding applicants' remarks on claim 9, the applicants' state that the determination of the adjusted quantization level is not disclosed. Please see rejection

and note that Uz's column 12, lines 50-53 discloses the limitation of determining the adjusted quantization level.

Regarding applicants' remarks on claims 12 & 13, applicants' argue that the complexity disclosed in Uz is different from the complexity measure disclosed in the present invention. The examiner respectfully disagrees. The complexity measure disclosed in Uz is in fact equivalent to the applicants' complexity measure since both pertain to the "frame complexity" and it is well known to one of ordinary skilled that a frame is comprised of macroblocks, and a macroblock is comprised of pixels.

With regards to applicants' comments on claim 26, applicants' argue that the examiner stated that Uz does not teach the determination of an activity level. The examiner respectfully disagrees. The examiner did point out that the determination of an activity level in the rejection below. Please see rejection below and comments in the above paragraphs. Further, applicants' mention that the obviousness has not been established. As stated before, Uz teaches the determination of an activity level (col.8, lines 27-35). Uz fails to discloses the comparison of a minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock. It would have been obvious to one of ordinary skill in the art to compare the minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock for encoding accuracy and efficiency.

Regarding page 40, lines 20-24 of applicants' remarks, applicants' remark that Uz teaches away from both the use of information exclusively within the macroblock and

the "use of a value other than the minimum as an activity level for the macroblock". The examiner respectfully disagrees. First, Uz does teach the use of information within the macroblock since a macroblock is comprised of pixels, as one of ordinary skilled would acknowledge. Second, applicants' state that Uz always uses the minimum value calculated from blocks within and surrounding the macroblock as the value of the macroblock. How can the system of Uz have a minimum value without the ordering of values (ie. without the prioritization of the block values)? It cannot have a minimum value. In other words, Uz must have the block values ordered or prioritized at some point to determine the minimum value otherwise the minimum value would not be obtainable without the ordering of values. The values would be indistinguishable without order.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7, 9, 12, 13, 15-18, 20-26, 28 and 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uz (5,682,204) and Flannaghan (4,703,358) in view of Park (5,825,930).

Regarding claim 1, Uz discloses a method for encoding a frame, comprising:

using intra-frame statistics to determine without reference to another frame

whether said frame includes a noisy portion (col.3, lines 25-27; note intra-frame

encoding is used and note Uz discloses "significant detail" is determined in a video

frame, thus statistics are gathered from the intra-frame encoding process), and if so,

then for each macroblock of said frame:

(I) determining a macroblock activity level (col.8, lines 27-35; an activity level is

measured which is the same as the determination of an activity level);

(ii) determining when said macroblock activity level exceeds a predefined

threshold (see figure 3; note that a threshold is set and a determination means must

exist to determine when the activity threshold is passed so that a course of action will be

taken due to the determination of whether the macroblock activity level exceeds a

predefined threshold), wherein said macroblock activity level exceeding said predefined

threshold indicates that said macroblock is associated with said noisy portion of said

frame; and

(iii) adjusting encoding of said macroblock when said macroblock activity level

exceeds said predefined threshold to conserve bits used in encoding said macroblock

(see figure 3; note that if a threshold is exceeded, then intercoding is used which

thereby reduces the bit-rate and conserve bits used in encoding said macroblock) by

biasing coding of said macroblock associated with said noisy portion of said frame

towards predictive coding (col.9, lines 4-12, lines 36-43; please note that Uz does teach

the biased coding of macroblocks towards "inter-coding" or predictive coding, thus this

"bias" is used to encode macroblocks towards predictive coding) and thereby save bits

otherwise used to encode said noisy portion of said frame and provide a more constant

picture quality due to encoding of the frame.

Although Uz may not appear to mention the limitation of "determining whether said frame includes a noisy portion, and if so, then for each macroblock of said frame", Flannaghan teaches the determination of noise in frames (col.3, lines 3-10; note that the erroneous frame difference value is the noisy portion of a frame, and of course, as any one of ordinary skilled would know that frames are comprised of macroblocks). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Uz and Flannaghan for noise reduction and adaptive encoding so as to provide accurate, efficient encoding schemes for producing high quality images.

Note claims 2, 3, 17, 24, 25, 31, 37 and 38 have similar corresponding elements.

As for claims 7 and 28, Uz discloses motion estimation process done on said macroblock (col.11, lines 20-26).

Regarding claims 9, 22-23 and 35-36, Uz discloses the determination of adjusted quantization level for use in encoding a macroblock (col.12, lines 50-53).

Regarding claims 4, 18 and 32, Uz discloses the comparison of "total activity of a frame macroblock" (col.5, lines 62-63). However, Uz fails to disclose the comparison of a minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock as disclosed by the applicant. Therefore, it would have been obvious to one of ordinary skill in the art to compare the minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock for encoding accuracy and efficiency.

Regarding claim 5, Uz does disclose the calculation of average activity (col.11,

lines 12-13) in frame macroblocks. However, Uz fails to teach the comparison of a minimum activity level with an average activity level in said multiple blocks of said macroblock. Therefore, one of ordinary skill in the art would obviously do a comparison of a minimum activity level with an average activity level in said multiple blocks of said macroblock for improving encoding accuracy and efficiency.

As for claims 12 and 13, Uz discloses a measure of a frame complexity value (col.12, lines 60-64). However, Uz fails to teach the calculation of a complexity threshold and the comparison of said frame complexity value. Therefore, it would have been obvious to one of ordinary skill in the art to calculate a complexity threshold from a group of frames, since an activity threshold can be calculated, and a comparison of complexity values is obvious to do from a group of complexity values for improving encoding accuracy and speed.

As for claims 15, 16, 20 and 33, one of ordinary skilled in the art would obviously recognize that all digital devices require the flagging of ones and zeroes since digital logic dictates the well known use of a binary system in digital communications.

Regarding claim 26, Uz does teach the determination of an activity level (col.8, lines 27-35; the measure of an activity level is the determination of an activity level). However, Uz fails to disclose the comparison of a minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock as disclosed by the applicant. Therefore, it would have been obvious to one of ordinary skill in the art to compare the minimum activity level of said order with a

next to minimum activity level of said order to derive said activity level for said

macroblock for encoding accuracy and efficiency.

Note claims 21 and 34 have similar corresponding elements.

Allowable Subject Matter

Claims 6, 8, 10, 14, 19, 27, 29 and 30 are allowed over the prior art.

The following is a statement of reasons for the indication of allowable subject matter:

the applicant incorporated the allowable subject matter into an independent form along

with the intervening claim limitations. The combination of limitations in the independent

claims 6, 8, 10, 14, 19, 27 and 29 were not taught in the prior art and are patentable.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Allen Wong whose telephone number is (703) 306-

5978. The examiner can normally be reached on Mondays to Thursdays from 8am-

6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Christopher Kelley can be reached on (703) 305-4856. The fax phone

numbers for the organization where this application or proceeding is assigned are (703)

872-9314 for regular communications and (703) 872-9314 for After Final

communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

4700.

AW
October 30, 2001

CHRIS KELLEY
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